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which I associate with the type were also found by Mr. Davis at Cornelia, Ga., at an elevation of about 1,500 ft. All three were taken in July, 1910.

The greatest difference between this species and *thoracicus* is in the posterior tarsi which in the latter have the first joint as long as half the tibia and much longer than all the remaining joints together, while in *thoracicus* the first joint is as long as one-third the tibia and equal to all the following joints together. The most obvious differences are in the pale head and partly pale antennæ and the much smaller body.

THE EFFECTS OF PARASITIC CASTRATION IN MEMBRACIDÆ.

BY IGNAZ MATAUSCH,

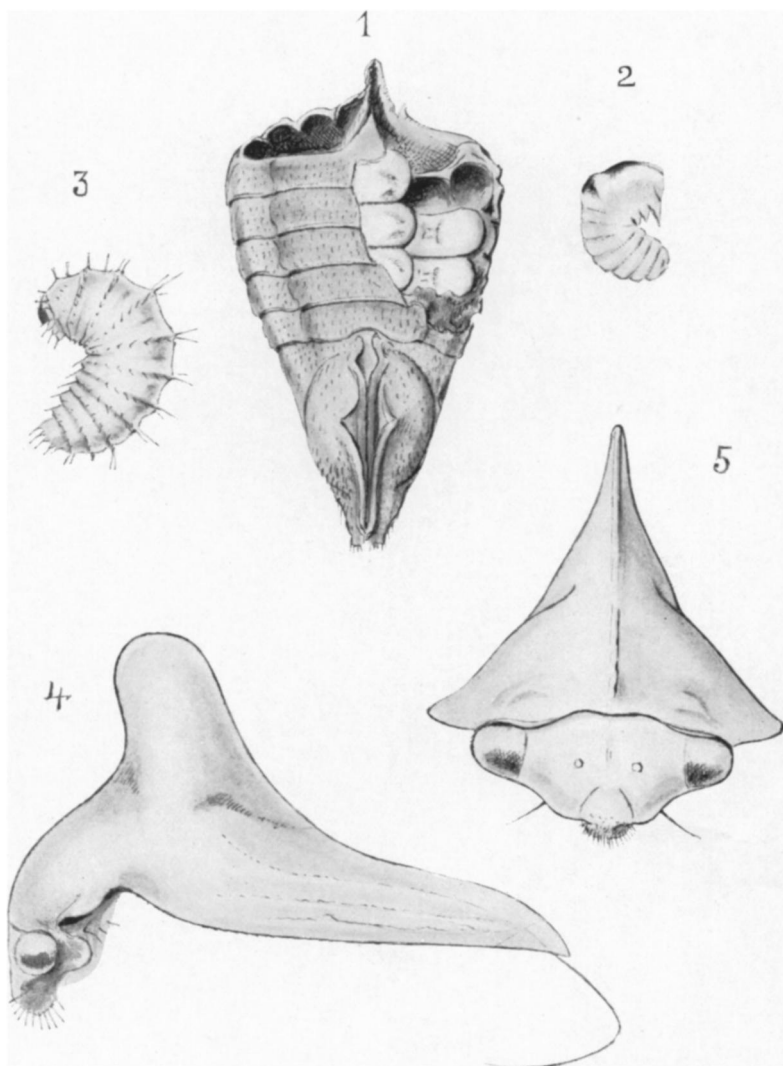
ROSELLE, N. J.

(WITH PLATE VI.)

In an article published in the December number, 1909, of this periodical I described as "gynandromorphs" some anomalous forms of a small species of *Telamona* found on the sweet gum (*Liquidambar styraciflua*). Professor W. M. Wheeler suggested at the time (*in litteris*) that these anomalies might be due to the presence of parasites and therefore represent conditions similar to those found by Giard in *Typhlocyba*.¹

Having had little experience in microscopic dissection, I asked Dr. A. Petrunkevitch to examine some of the specimens. He very courteously complied with my request, and in one of them found 19 small larvæ. Another specimen which he returned to me with only the ventral abdominal wall removed and showing the larvæ in position, is represented in Pl. VI, Fig. 1. It shows five parasites very clearly and a sixth partly concealed. One of these was removed and is shown in Fig. 2. The larvæ lie on the abdomen, with their own abdomens directed towards the dorsal and their thorax and ventral surface towards the ventral side of their host. Unfortunately I

¹ Sur la castration parasitaire de *Typhlocyba* par une larve d'Hyménoptère (*Aphelopus malaleucus* Dalm.) et par une larve de Diptère (*Atelonevra spuria* Meig.), C. R. Acad. Sci., CIX, 1889, p. 708.



Parasitized Membracids.

did not succeed in rearing any of the parasites. The larvæ, however, escaped from one of the only three infested specimens of the small species of *Telamona* taken during the summer of 1910.

July 1, 1910, I found, in the locality in which I collected during 1909, the first of these sexual anomalies, but this belonged to the large *Telamona* species (near *heliria*). It was feeding on *Liquidambar*. July 2, on the same food-plant and in the same place, I took two more of the anomalies and three normal females of the small *Telamona*, which had been much more abundant during the preceding year. July 5 I captured one anomalous specimen and a normal male. Acting on the advice of Dr. Petrunkevitch I kept the anomalies alive on their food-plant in order to give the parasites an opportunity to pupate, but the Membracids all died before the parasitic larvæ could effect their escape from them.

The *Telamona* taken July 5 was kept in a glass by itself, but on the fourth day, when I was about to give it fresh food, I found it dead. In the glass were five pale green larvæ which moved about like Dipterous maggots. These had made their escape through the ventral integument of the Membracid. Two of them, which seemed to be vigorous enough to live, I placed on some earth and preserved the three others in alcohol. Fig. 3 represents one of the latter. I was hindered at this time from continuing my observations. Three weeks later when I looked for the larvæ left on the earth, I found that they had disappeared and all the earth was covered with mould.

I have also found *Carynota mera* infested with parasitic larvæ very similar to those of *Telamona*. One specimen of the former Membracid was taken in the beginning of July, the other on the twenty-eighth of the same month. The abdomen of the latter specimen was abnormally distended with the parasites. In neither case did I succeed in rearing these to maturity. The same was true of *Thelia bimaculata* which I found in considerable numbers during 1909 near Newark, N. J. Among these were ten individuals with abnormal genitalia of the type described in my former paper and all contained parasitic larvæ.

This association of parasites with a malformation or inhibition of the development of the external genitalia occurs, however, not only in *Telamona*, *Carynota* and *Thelia* but also in *Glossonotus*, for I have found three parasitized specimens belonging to this genus

among a series kindly given me by Dr. John B. Smith. Another specimen with abnormal genitalia, which was received from Mr. G. Franck of Brooklyn, is represented in outline in Figs. 4 and 5. It is as large as a large female of *Glossonotus univittatus*, but with the prominence behind the humeri and the tip of the prothorax more arcuate, and with the humeral projections of *G. acuminatus* and the wings of *G. univittatus*.

That the parasites produce the sexual anomaly also in *Cyrtolobus* is proved by a specimen which I collected together with several normal individuals, July 13, at Woods Hole, Mass. This has the external genitalia of a female, but they are only half the normal size. Careful examination revealed the presence on the abdomen of small white lumps which were undoubtedly parasitic larvæ that had died in the act of leaving the body cavity of their host.

It is worthy of note that none of the parasitized Membracids lives well in confinement, except the small *Telamona* which are very active, one might almost say playful. It is certainly remarkable that the parasites often die without leaving the Membracids and apparently before attaining their full size, notwithstanding the fact that they destroy the internal sexual organs of their hosts. In many cases the abdomens of the latter are far from reaching their normal dimensions, while in others they swell up to an extraordinary size. Some of the latter insects, when dried, look as if they were hollow.

MISCELLANEOUS NOTES.¹

***Utetheisa bella* var. *nova*.**—A rather peculiar error occurs in Smith's last edition of the Insects of New Jersey which it seems advisable to point out without delay. On page 438 under *Utetheisa bella* are listed three varieties, the last of which is *nova* and is credited to N. and D. (Neumœgen and Dyar). In the preparation of his notes for the list the present writer included in his records the typical

¹ The New York Entomological Society has decided to publish in each issue of its JOURNAL a number of short notes. Members of the society and other contributors are requested to send any observations that may be properly included in this department of the periodical to the Secretary, Mr. H. G. Barber, Roselle Park, N. J.